

and there are three pairs of jaws set 120 degrees apart. The upper portion of the fixture *E* is made separate in order to facilitate the machining of the slots. Two cylindrical cams *H* and *I* control the radial movements of the jaws by means of the screw *K* which is threaded with a coarse-pitch left-hand thread in the lower cam and a right-hand thread in the upper cam. The upper end of the rod is squared at *L* and is operated by a socket wrench *M*. In order to prevent the entry of chips and dirt into the mechanism, a felt washer *S* is fastened to the upper cam; and steel cover-plate *R* is placed on top of the fixture and held in place by screws. The hardened steel pin *T* strikes against the inner cored surface and locates the piece vertically. Slots are cut in the upper portion of the fixture *E* to allow the insertion of the flat springs *Q* which throw the jaws back into position upon withdrawing them from the work; and a sheet steel cover-plate *P* keeps the dirt out of these slots. The cams and screw are supported by the coil spring shown below the lower cam, and the action of the cams is limited by the screws *U* which enter slots in the cams. These screws also serve to prevent the revolution of the cams. A combination boring and reaming bar *W* is used for boring and reaming the hole while the outside surfaces are machined by various tools in the side head, one of these being shown at *V*.

In the construction of this device it will be noted that although six points or jaws are used for locating, the arrangement is such that they all bear against the inside of the casting with an equal amount of pressure, at the same time centering the work from the cored interior. As the right-and-left screw on the rod *K* is rotated, the two cams float vertically so that the pressure on the jaws is equalized. A device of this kind is useful in many instances when work is to be held from an internal cored surface.